

**IN THE CLAIMS**

Please amend the claims as follows:

Claims 1-10 (canceled)

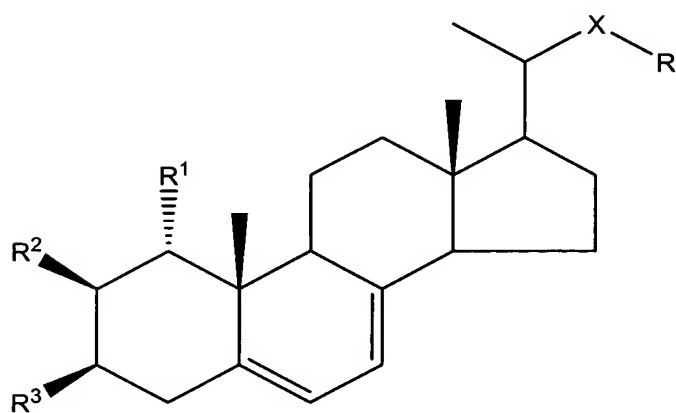
Claim 11 (currently amended): A process for preparing a vitamin D derivative, comprising:

providing a reaction container configured to contain a solution of a provitamin D derivative and an ultraviolet irradiation apparatus for photochemical reactions, which comprises configured to irradiate the solution of the provitamin D derivative in the reaction container with an ultraviolet irradiation, the ultraviolet irradiation apparatus comprising an ultraviolet radiation-emitting lamp, an optical system on which positioned to be struck by light from the ultraviolet radiation-emitting lamp is struck and which emits and configured to emit ultraviolet rays having a specific wavelength, [[and]] a quartz rod on which positioned to be struck by the ultraviolet rays having the specific wavelength from the optical system, are struck and a projection lens positioned to be struck by and to irradiate the solution of the provitamin D derivative in the reaction container with the ultraviolet rays through the quartz rod, the projection lens being configured to control a spot size of the ultraviolet rays having the specific wavelength;

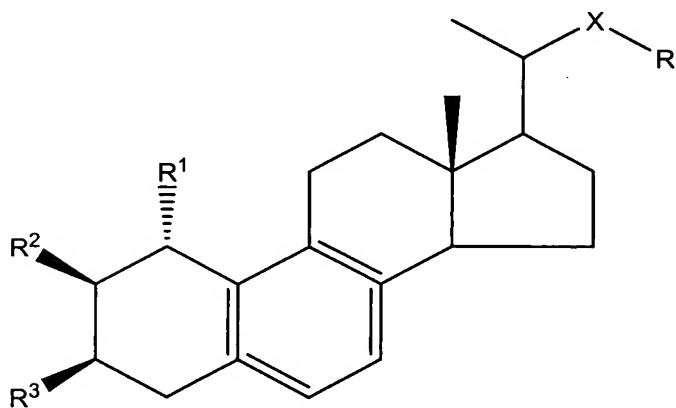
irradiating [[a]] the solution of [[a]] the provitamin D derivative with the ultraviolet rays ~~having the specific wavelength~~ emitted from the ~~quartz rod~~ projection lens of the ultraviolet irradiation apparatus to cause a photochemical reaction [[to]] of the provitamin D derivative solution, ~~thereby forming and form~~ a previtamin D derivative; and

subjecting the previtamin D derivative to a thermal isomerization reaction to prepare the vitamin D derivative.

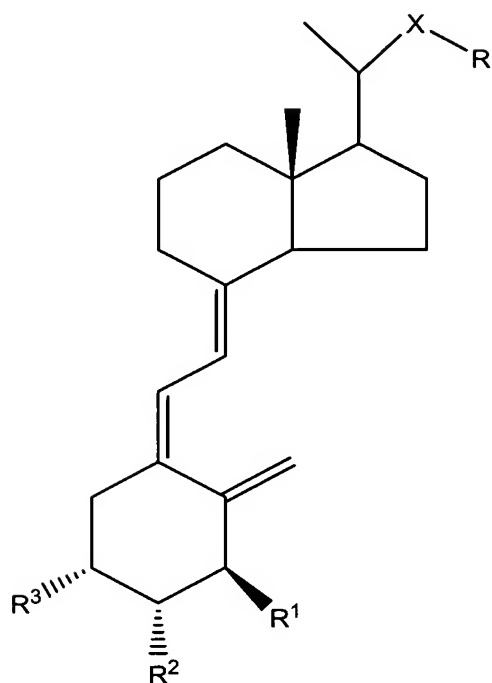
Claim 12 (currently amended): The process according to Claim 11, wherein the provitamin D derivative is a compound represented by the following general formula 1, the previtamin D derivative is a compound represented by the following general formula 2, and the vitamin D derivative is a compound represented by the following general formula 3,



General Formula 1



General Formula 2



General Formula 3

wherein R<sup>1</sup> and R<sup>3</sup> individually is a hydrogen atom or a hydroxyl group which may have a protecting group, R<sup>2</sup> is a hydrogen atom, a hydroxyl group which has a protecting group, a lower alkoxy group having 1 to 10 carbon atoms which may be substituted or a lower alkyl group having 1 to 10 carbon atoms which may be substituted, R is a hydrogen atom or a lower alkyl group having 1 to 10 carbon atoms which may be substituted, and X represents -O-CH<sub>2</sub>-, -S-CH<sub>2</sub>-, -CH<sub>2</sub>-CH<sub>2</sub>-, -CH=CH- or -N-(R<sup>4</sup>)-CH<sub>2</sub>-, in which R<sup>4</sup> is a hydrogen atom or a lower alkyl group having 1 to 10 carbon atoms which may be substituted.

Claim 13 (previously presented): The process according to Claim 12, wherein the irradiation comprises irradiating a solution of the provitamin D derivative represented by the general formula 1 with the ultraviolet rays to cause a photochemical reaction of the provitamin D derivative solution, thereby forming the previtamin D derivative represented by the general formula 2.

Claim 14 (original): The preparation process according to Claim 12, wherein in the general formulae 1, 2 and 3,  $R^3$  is a hydroxyl group, and X is  $-O-CH_2-$ .

Claim 15 (original): The preparation process according to Claim 14, wherein in the general formulae 1, 2 and 3,  $R^1$  is a hydroxyl group.

Claim 16 (original): The preparation process according to Claim 15, wherein in the general formulae 1, 2 and 3,  $R^2$  is a hydrogen atom.

Claim 17 (original): The preparation process according to Claim 16, wherein in the general formulae 1, 2 and 3, R is  $-CH_2-C(CH_3)_2OH$ .

Claim 18 (original): The preparation process according to Claim 16, wherein in the general formulae 1, 2 and 3, R is  $-CH_2-CH(CH_3)_2$ .

Claim 19 (original): The preparation process according to Claim 13, wherein in the general formulae 1 and 2,  $R^3$  is a hydroxyl group, and X is  $-O-CH_2-$ .

Claim 20 (original): The preparation process according to Claim 19, wherein in the general formulae 1 and 2,  $R^1$  is a hydroxyl group.

Claim 21 (original): The preparation process according to Claim 20, wherein in the general formulae 1 and 2,  $R^2$  is a hydrogen atom.

Claim 22 (original): The preparation process according to Claim 21, wherein in the general formulae 1 and 2, R is  $-CH_2-C(CH_3)_2OH$ .

Claim 23 (previously presented): The preparation process according to Claim 21, wherein in the general formulae 1 and 2, R is  $-CH_2-CH(CH_3)_2$ .

Claim 24 (original): The preparation process according to Claim 12, wherein in the general formulae 1, 2 and 3,  $R^3$  is a hydroxyl group, and X is  $-CH_2CH_2-$ .

Claim 25 (original): The preparation process according to Claim 24, wherein in the general formulae 1, 2 and 3,  $R^1$  is a hydroxyl group.

Claim 26 (original): The preparation process according to Claim 25, wherein in the general formulae 1, 2 and 3,  $R^2$  is a hydrogen atom.

Claim 27 (original): The preparation process according to Claim 25, wherein in the general formulae 1, 2 and 3,  $R^2$  is a hydroxypropoxy group.

Claim 28 (original): The preparation process according to Claim 26, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 29 (original): The preparation process according to Claim 26, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ .

Claim 30 (original): The preparation process according to Claim 27, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 31 (original): The preparation process according to Claim 27, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2\text{CH}(\text{CH}_3)_2$ .

Claim 32 (original): The preparation process according to Claim 13, wherein in the general formulae 1 and 2,  $R^3$  is a hydroxyl group, and X is  $-\text{CH}_2-\text{CH}_2-$ .

Claim 33 (original): The preparation process according to Claim 32, wherein in the general formulae 1 and 2,  $R^1$  is a hydroxyl group.

Claim 34 (original): The preparation process according to Claim 33, wherein in the general formulae 1 and 2,  $R^2$  is a hydrogen atom.

Claim 35 (original): The preparation process according to Claim 33, wherein in the general formulae 1 and 2,  $R^2$  is a hydroxypropoxy group.

Claim 36 (original): The preparation process according to Claim 34, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 37 (original): The preparation process according to Claim 34, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ .

Claim 38 (original): The preparation process according to Claim 35, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 39 (original): The preparation process according to Claim 35, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ .

Claim 40 (original): The preparation process according to Claim 12, wherein in the general formulae 1, 2 and 3,  $\text{R}^3$  is a hydroxyl group, and X is  $-\text{CH}=\text{CH}-$ .

Claim 41 (original): The preparation process according to Claim 40, wherein in the general formulae 1, 2 and 3,  $\text{R}^1$  is a hydroxyl group.

Claim 42 (original): The preparation process according to Claim 41, wherein in the general formulae 1, 2 and 3,  $\text{R}^2$  is a hydrogen atom.

Claim 43 (original): The preparation process according to Claim 42, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 44 (original): The preparation process according to Claim 42, wherein in the general formulae 1, 2 and 3, R is  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ .

Claim 45 (previously presented): The preparation process according to Claim 13, wherein in the general formulae 1 and 2,  $\text{R}^3$  is a hydroxyl group, and X is  $-\text{CH}=\text{CH}-$ .

Claim 46 (original): The preparation process according to Claim 45, wherein in the general formulae 1 and 2,  $\text{R}^1$  is a hydroxyl group.

Claim 47 (original): The preparation process according to Claim 46, wherein in the general formulae 1 and 2,  $\text{R}^2$  is a hydrogen atom.

Claim 48 (original): The preparation process according to Claim 47, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{C}(\text{CH}_3)_2\text{OH}$ .

Claim 49 (original): The preparation process according to Claim 47, wherein in the general formulae 1 and 2, R is  $-\text{CH}_2-\text{CH}(\text{CH}_3)_2$ .

Claim 50 (new): The preparation process according to Claim 11, wherein the projection lens is configured to control a diameter of the spot size.

Claim 51 (new): The preparation process according to Claim 11, wherein the projection lens is configured to control a density of the ultraviolet rays having the specific wavelength.

Claim 52 (new): A process for preparing a vitamin D derivative, comprising:  
providing a reaction container configured to contain a solution of a provitamin D derivative and an ultraviolet irradiation apparatus configured to irradiate the solution of the provitamin D derivative in the reaction container with an ultraviolet irradiation, the ultraviolet irradiation apparatus comprising an ultraviolet radiation-emitting lamp, an optical system positioned to be struck by light from the ultraviolet radiation-emitting lamp and configured to emit ultraviolet rays having a specific wavelength, and a quartz rod positioned to be struck by the ultraviolet rays from the optical system and configured to directly irradiate the solution of the provitamin D derivative in the reaction container with the ultraviolet rays;  
irradiating the solution of the provitamin D derivative in the reaction container with the ultraviolet rays emitted from the quartz rod of the ultraviolet irradiation apparatus to cause a photochemical reaction of the provitamin D derivative and form a previtamin D derivative; and

subjecting the previtamin D derivative to a thermal isomerization reaction to prepare the vitamin D derivative.

Claim 53 (new): The preparation process according to Claim 52, wherein the quartz rod is configured to be immersed into the solution of the provitamin D derivative in the reaction container.